

The moulds are transferred to a furnace, where, by sublimation, much of the remaining mercury is evaporated and subsequently recovered, leaving the pure metal in somewhat similar moulds to that of a small Cheshire cheese. These are then sent to the Government Smelting Works, which are conducted in a very free and easy style. When the furnace has reduced the metal to a proper state, the crucible's molten contents are poured into a rough mould, in which hay or straw has been previously placed. At the moment of contact the latter ignites, thereby producing a gas which I was given to understand prevented splashing or bubbling of the metal, which would otherwise ensue. After remaining a short time in the mould, the bar is tossed over on the floor, and any rough edges are well hammered whilst soft. Next follows the cooling, as if it were a piece of iron in a blacksmith's shop. Weighing and stamping with the progressive number, marks, &c., of the revenue, weight and value, complete the whole, and the bar is then ready for transmission to Lima, on the backs of mules.

These ingots are sent down the mountains without the slightest protection, as the banditti know that they are of no use to them in the state they are, and prefer occasionally attacking the escort coming up to the mines with coin for the payment of wages and purchase of metal.

ART. VII.—*On some Domesticated Animals of South America which would be useful in Victoria.* By P. NISSER, Esq.

[Read before the Institute, 22nd June, 1859.]

FOR some peculiar reason the regions of Chili, Lower and Upper Peru, but especially the latter, are the more favored regions of the vast South American continent, where varieties of animal tribes exist which have proved of great importance to the original occupiers of that part of our globe. Previous to the conquest and extinction of the great empire of Peru, much care and attention was paid to the animals termed by the Spaniards Peruvian sheep, but now known as the Llama, Alpaca, and Vicuna. The Llama is the tallest and most corpulent of the three, and is well known as having been the only domesticated animal of burden in South America previous to the conquest by the Spaniards. It was

confined to the Peruvian territory, and capable of carrying from one hundred to one hundred and twenty-five pounds weight; it was therefore of two-fold utility, being valuable both as yielding a fleece held in high estimation, and as a patient beast of burden. The Alpaca is smaller and more slender than the Llama, and was prized for its fine colored wool, which is of a light brown hue.

The Vicuna is of a smaller size than the Alpaca, and produces a long fine white silky fleece, highly prized for the superiority of the wool, which was exclusively used to make cloth for the Incas and other members of the Imperial Family.

Those varieties of the Peruvian sheep which abounded in the higher regions of the Andes were regularly hunted twice a year, when the imperial court presided over by the Inca directed this important operation, which was conducted in the following manner:—A thousand or more of loyal subjects being collected, and a convenient well-closed spot in the mountains selected, a line was formed around a wide space, which was gradually shortened until the animals were driven into the inclosure. The lazo was then employed to catch as many as might be required of each tribe, the old ones being always selected. The greater number of these were merely shorn and turned loose again, but some were killed and distributed among the people as food. The wool was then distributed according to its quality, and such of the Llamas as were considered necessary, were reserved to replenish the stock of beasts of burden. With such systematic regulations, it is easy to perceive that the stock would continue to increase both in quality and numbers, but after the conquest the aboriginal inhabitants were mostly destroyed or scattered, and the destruction also extended to the animal tribes, which by the instinct of self-preservation fled from their usual haunts, and gradually retreated to the more remote tracts of the Eastern Cordilleras. The flocks, formerly abundant, were by this means scattered, and as a consequence gradually reduced in numbers. The Llama of pure breed and the cross with the Alpaca are still used as beasts of burden both in Peru and on the table lands of Ecuador, Quito, and other parts. Considering that in Upper and Lower Peru especially, and in some tracts of Ecuador, where the Llama is used as a beast of burden, that about 600,000 are in actual service, we can imagine how numerous they have been in former times.

The pure Alpaca is rarely to be found at present, but the cross with it and the Llama, when properly attended to,

proves an improved breed, both as to vigor and size, compared with the pure Alpaca, and as they lamb within about twelve months, a few years only will be required to obtain a superior Alpaca fleece, with the additional advantage of having also a more robust and hardy animal. This circumstance is well worthy of attention; and as these animals thrive in all temperatures, they may become of great importance to this colony.*

The Vicuna, after the conquest, suffered more than the other two species, on account of its being more feeble, timid, and shy. A small number only can be now seen among the domesticated animals, but the superior quality of the wool will sufficiently justify any additional attention required to secure the increase of so valuable an article of commerce. The penalty of death was incurred under the rule of the Incas by any one who dared to injure one of these highly prized animals.

In the interior of the mountain ridges of the Eastern Cordilleras of Peru and Ecuador there exists another animal tribe which has scarcely been known beyond the mountain ridges where it breeds, but which has been highly appreciated wherever it has been introduced; it is called the "Peruvian Highland Goat." Although in many particulars similar to the well-known species, it differs from the mountain goat of Switzerland, being taller and stouter than that fine specimen of the species. In fact, it is beyond doubt the best developed in size and bulk of its species. But the chief characteristic of the Peruvian goat is the long curly hair which covers its back and hind quarters. From this peculiarity in some districts it has been called "*la cabra lanuda*," or the woolly goat. The wool is generally grey mixed with a light brown and white, or black and white, the latter being the most prevalent.

The milk of the goat has been generally regarded as a good substitute for the mother's milk of our species, and in many parts of the world the goat will be found with the dog as the

* The pasture on which the Peruvian sheep principally feed is a long rough grass, to which the Spaniards gave the name of "techo," as it is useful for thatching. Some writers have stated that the Peruvian sheep will not thrive where this kind of grass does not prevail; this is not exactly the case, for I have seen these animals in a flourishing state in N. Granada, where the "techo" was not known. This herb is by botanists known by the name of *Monandria Dygynia*, of the Iarava class—*Ichù* being the common name for this gramineous tribe, the reed of which is high and strong, the top part being the favorite food.

constant companions of man. Such is the case in many parts of South America, where the woolly goat prevails. It and the dog are the constant, and often the only domesticated animals that follow the aboriginal families up to the elevated regions on the boundaries of perpetual snow, or down to the deep valleys where the tropical sun, at certain seasons, burns up the pasture. In both these extremes of temperature the goat thrives, and what is still more singular, the quantity of milk is not materially affected, which averages from forty to fifty per cent. more than the ordinary goat. It is therefore regarded as a most valuable addition to the family stock, and often proves of a special benefit, by supplying nutriment for infants when the milk of the parent has failed or has proved insufficient. The hair of this goat is used by the natives in the manufacture of carpets—"Alfombras."

When we consider the superiority of the Peruvian Goat to the ordinary one, both as to the quantity of milk it yields and its peculiarly hardy character, it appears likely to prove a desideratum to this colony for supplying families who reside in the Stringy Bark Ranges, and other localities where grass is scarce, with a substitute for the cow, as the former would thrive where the latter would starve. It may therefore be regarded as well worthy of attention to those interested in supplementing and improving the domesticated animals of the colony.

On the boundaries of Peru and Ecuador a kind of sheep exists, which is well-known for its fine long wool. The fleece has some similarity to the merino, but the color, instead of being white, is of a light bluish grey or leaden hue. The animal is also smaller than the merino. The colored wool of this sheep sells on the spot at about four times the price of the ordinary white wool. This species is by no means abundant, and as the colored wool is highly esteemed for some manufactures, especially for the cloak known as the "Poncho," it is retained within the limits of the region where it is produced. The size and quality are capable of great improvement, and might become a valuable cross and improvement on the merino. It is well known that in South America very little, if any, effort is made to improve the breed of stock. Labor or expense is seldom expended on any such objects, all being left to nature. It appears, therefore, well worthy of being commended to the attention of those who are anxious to improve and increase the stock of this colony. That these colored sheep would

thrive in this colony there can be little doubt, and their great value, as well as singular peculiarity, would amply justify the moderate amount of trouble and expense the attempt to introduce a small number would involve.

The Horse was introduced by the Spaniards, and greatly aided them in their rapid and bloody conquest of the timid and gentle natives, who were equally surprised at the strange animals their invaders rode, and the novel weapons they used. There has been very little care taken by the Spaniards to improve the breed of this useful animal. They are generally allowed to roam wild on the open plain, where they are caught with the lazo as required. A superior breed, however, is to be found in Peru and other parts of this extensive continent. The mules from Upper and Lower Peru are of a superior quality, and form a considerable article of export to the Northern States, where they are extensively employed for the purpose of transport in the mountain regions.

The Peruvian pony is a small, hardy, sure-footed animal. It is capable of enduring fatigue to nearly as great a degree as the mule, but for mountain travelling the latter is generally preferred for its well-known sure-footed quality. Having thus briefly presented an account of the most useful domesticated animals of South America, I now leave it to the Philosophical Institute to consider what steps may be deemed requisite to secure the benefits likely to result to this colony from the introduction of some of these useful animals.

ART. VIII.—*On the First Technical Use of Gold by the Aborigines of South America, with a description of the Indian Tombs.* By P. NISSER, Esq.

[Read before the Institute 22nd June, 1859.]

(With a Plate.)

THE present times furnish ample illustration of the influence gold has had in extending civilization and promoting the rapid populating of previously desert regions.

Gold, as the representative of material wealth, has always exercised a powerful influence on the actions of mankind. It is, therefore, highly interesting as well as instructive, to observe the effects produced on the natives of the wilderness